REMARKS

Claims 1 and 3-13 were pending. Claims 1, 6, and 13 have been amended for clarity. Claim 10 has been canceled. Claims 1, 3-9, and 11-13 now are pending.

The proposed drawing corrections filed June 13, 2002 have been accepted. Formal drawings are being submitted with this amendment.

The Examiner has objected to claim 10 as being of improper dependent form. Claim 10 has been canceled.

Claims 1 and 3-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,320,668 to Kim in view of Japanese Publication No. 02-74367A (Yamaguchi). Without conceding that Kim is prior art to the present application, Applicant respectfully traverses this rejection.

Claim 1 recites a color correction method that includes "obtaining reference outputs from an image sensor using a color image array, said reference outputs being indicative of outputs for a plurality of known reference colors, said plurality of known reference colors including at least three primary colors, and at least two other non-primary colors," "determining an error measure for each of said plurality of known reference colors, said error measure representing a difference between said reference outputs and what would be expected for each of said reference outputs," "applying a weight factor to each said error measure for each of said plurality of known reference colors to obtain a respective weighted error measure for each of said plurality of reference colors," and "obtaining a color correction matrix which is adjusted to minimize said respective weighted error measure for each of said plurality of reference colors," and "using said color correction matrix to optimize color correction simultaneously for each of said plurality of reference colors to obtain a color-corrected image."

Kim discloses a color correction method in which errors between colorimetric scanning data and test pattern data are minimized. Kim does not teach or suggest a color

correction method that includes "*applying a weight factor* to each said error measure for each of said plurality of known reference colors to obtain a *respective weighted error measure* for each of said plurality of reference colors," and "obtaining a color correction matrix which is adjusted to *minimize said respective weighted error measure* for each of said plurality of reference colors," and "using said color correction matrix to optimize color correction simultaneously for each of said plurality of reference colors to obtain a color-corrected image." Kim does not anticipate or render obvious the invention recited in claim 1.

Yamaguchi (translation) does not cure the deficiencies of Kim. Yamaguchi discloses a method of color correction in which *color sample data* is weighted, and a coefficient matrix is obtained based on the weighted color sample data. Thus, Yamaguchi (translation) does not teach or suggest a color correction method that includes "determining an error measure for each of said plurality of known reference colors, said error measure representing a difference between said reference outputs and what would be expected for each of said reference outputs," "applying a weight factor to each said *error measure* for each of said plurality of known reference colors to obtain a respective weighted error measure for each of said plurality of reference colors," and "obtaining a color correction matrix which is adjusted to minimize said respective weighted error measure for each of said plurality of reference colors," and "using said color correction matrix to optimize color correction simultaneously for each of said plurality of reference colors to obtain a color-corrected image."

Further, the proposed combination lacks motivation absent an improper hindsight reconstruction. Kim discloses color correction that minimizes errors using no weighting whatsoever, whereas Yamaguchi discloses color correction using weighted color sample data. Neither Kim nor Yamaguchi provides the motivation necessary to modify Kim as would be required to arrive at the present invention. Moreover, even if the Kim and Yamaguchi references were properly combinable, the result would be a color correction system which utilizes weighted color sample data, and not the system recited in

claim 1 which utilizes weight weighted error measures. Claim 1, and its dependent claims 3-5, are patentable over the cited prior art to Kim and Yamaguchi.

Claim 6 recites an image sensor apparatus including "an image sensor device, operating using a color filter array which provides color filtering such that colors transmitted to each pixel are measured to determine all color components that actually impinge on an area of said pixel," and "an image processor, operating adjusted to minimize respective *weighted error measures*, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being adjusted according to at least three primary colors, and at least two additional non-primary colors wherein said color correction matrix has an error measure for some colors weighted more than an error measure for other colors."

Kim discloses a color correction apparatus in which errors are minimized between stored colorimetric scanning data and captured test pattern data. Kim does not teach or suggest a color correction apparatus that includes "an image processor, operating according to a color correction matrix adjusted to minimize respective weighted error measures, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being adjusted according to at least three primary colors, and at least two additional non-primary colors wherein said color correction matrix has an error measure for some colors weighted more than an error measure for other colors." Kim does not anticipate or render obvious the invention recited in independent claim 6.

Yamaguchi (translation) does not cure the deficiencies of Kim. Yamaguchi discloses color correction in which color sample data is weighted, and a coefficient matrix is obtained based on the weighted color sample data. Thus, Yamaguchi (translation) does not teach or suggest a color correction apparatus that includes "an image processor, operating according to a color correction matrix adjusted to *minimize respective weighted*

error measures, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being adjusted according to at least three primary colors, and at least two additional non-primary colors wherein said color correction matrix has an error measure for some colors weighted more than an error measure for other colors."

Further, the proposed combination lacks motivation absent an improper hindsight reconstruction. Kim discloses color correction that minimizes errors using no weighting whatsoever, whereas Yamaguchi discloses color correction using weighted color sample data. Neither Kim nor Yamaguchi provides the motivation necessary to modify Kim as would be required to arrive at the present invention. Even if the Kim and Yamaguchi references were properly combinable, the result would be a color correction system which utilizes weighted color sample data, and not the system recited in claim 6, which utilizes weighted error measures. Claim 6, and its dependent claims 7-9 and 11-12, are patentable over the cited prior art to Kim and Yamaguchi.

Claim 13 recites a method of correcting an image from an image sensor that includes "dividing the image sensor into a plurality of pixels," "placing color separators over said plurality of pixels, such that each pixel receives incoming light that is filtered to emphasize one color component," and "obtaining a color correction matrix for said pixels, said color correction matrix being one which takes into account correction of incoming radiation for at least three primary colors, and two other non-primary colors, wherein respective error measures representing a difference between said reference outputs and what would be expected for each of said reference outputs for said non-primary colors are weighted such that said correction matrix corrects for some of said non-primary colors more than said primary colors."

Kim discloses a color correction method in which errors are minimized between colorimetric scanning data and test pattern data. Kim does not teach or suggest a color correction method that includes "obtaining a color correction matrix for said pixels, said

color correction matrix being one which takes into account correction of incoming radiation for at least three primary colors, and two other non-primary colors, wherein respective error measures for said non-primary colors are weighted such that said correction matrix corrects for some of said non-primary colors more than said primary colors, each error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for each of said reference outputs." Kim does not anticipate or render obvious the invention recited in claim 13.

Yamaguchi (translation) does not cure the deficiencies of Kim. Yamaguchi discloses a method of color enhancement in which color sample data is weighted, and a coefficient matrix is obtained based on the weighted color sample data. Yamaguchi (translation) does not teach or suggest a color correction method that includes "obtaining a color correction matrix for said pixels, said color correction matrix being one which takes into account correction of incoming radiation for at least three primary colors, and two other non-primary colors, wherein respective error measures for said non-primary colors are weighted such that said correction matrix corrects for some of said non-primary colors more than said primary colors, each error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for each of said reference outputs."

Further, the proposed combination lacks motivation absent an improper hindsight reconstruction. Kim discloses color correction that minimizes errors using no weighting whatsoever, whereas Yamaguchi discloses color correction using weighted color sample data. Neither Kim nor Yamaguchi provides the motivation necessary to modify Kim as would be required to arrive at the present invention. Even if the Kim and Yamaguchi references were properly combinable, the result would be a color correction system which utilizes weighted color sample data, and not the system recited in claim 13, which utilizes weighted error measures. Claim 13 is patentable over the cited prior art to Kim and Yamaguchi.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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